

Name _____

Date _____

Additional Exercises 1.4
Form I
Basic Rules of Algebra

For each algebraic expression in exercises 1 – 3, (a) determine the number of terms, (b) identify the coefficient of each term, (c) identify the constant term if there is one and (d) name any like terms or state there are none.

1. $4x + 5$

1a. _____

b. _____

c. _____

d. _____

2. $6x + 3y + 10$

2a. _____

b. _____

c. _____

d. _____

3. $3x + y + 5x + 7z$

3a. _____

b. _____

c. _____

d. _____

Use the indicated property to write an equivalent algebraic expression to the given expression.

4. $6x + 8$

(Commutative Property of Addition)

4. _____

5. $y \cdot 7$

(Commutative Property of Multiplication)

5. _____

6. $(x + 12) + 18$

(Associative Property of Addition)

6. _____

7. $6(3a)$

(Associative Property of Multiplication)

7. _____

Use the distributive property to rewrite each algebraic expression without parentheses.

8. $5(x + 7)$

8. _____

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9. $9(2x - 3)$ 9. _____

10. $4(x + 2y + 3)$ 10. _____

11. $\frac{1}{2}(4a + 10)$ 11. _____

Simplify each algebraic expression.

12. $14x + 3x$ 12. _____

13. $16y + 6x - x$ 13. _____

14. $12a + 3a + a + 6$ 14. _____

15. $8x - 2x + 4y - 2y$ 15. _____

16. $10y + 18 + 7y$ 16. _____

17. $25m + 12 - 15m - 10$ 17. _____

18. $5(x + 2) + 3x$ 18. _____

19. $6(x + 1) + 2(x + 5)$ 19. _____

Write each English phrase as an algebraic expression. Then simplify the expression. Let x represent the number.

20. The sum of three times a number and the number. 20. _____

21. The difference of four times a number and the number. 21. _____

22. Five times the product of a number and eight. 22. _____

23. Six times the sum of a number and twelve. 23. _____

24. Nine times the difference of seven and a number. 24. _____

Additional Exercises 1.4
Form II
Basic Rules of Algebra

For each algebraic expression in exercises 1 – 3, (a) determine the number of terms, (b) identify the coefficient of each term, (c) identify the constant term if there is one and (d) name any like terms or state there are none.

1. $12x + 3x + 8$

1a. _____

b. _____

c. _____

d. _____

2. $7x + \frac{1}{4}y + 2x + 5$

2a. _____

b. _____

c. _____

d. _____

3. $\frac{1}{5}x + \frac{1}{3}y + \frac{3}{5}x + \frac{1}{6}z$

3a. _____

b. _____

c. _____

d. _____

Use the indicated property to write an equivalent algebraic expression to the given expression.

4. $9 + 4x$

(Commutative Property of Addition)

4. _____

5. $a \cdot 12$

(Commutative Property of Multiplication)

5. _____

6. $(y + 25) + 15$

(Associative Property of Addition)

6. _____

7. $7(15a)$

(Associative Property of Multiplication)

7. _____

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Use the distributive property to rewrite each algebraic expression without parentheses.

8. $3(4x + 3)$ 8. _____

9. $6(6x - 7)$ 9. _____

10. $9(x + y + 5)$ 10. _____

11. $\frac{1}{4}(4x - 8y - 12)$ 11. _____

Simplify each algebraic expression.

12. $18x - x$ 12. _____

13. $12y + 4 + 6y + 5$ 13. _____

14. $8a + 3 - 2a - 2$ 14. _____

15. $6.3x - 2.9x + 10y - 5.3y + 13$ 15. _____

16. $12(x + 4) + \frac{1}{2}(6x + 10)$ 16. _____

Write each English phrase as an algebraic expression. Then simplify the expression. Let x represent the number.

17. Twice the sum of a number and ten. 17. _____

18. Eight times the product of six and a number. 18. _____

19. Fourteen increased by the product of a number and eighteen. 19. _____

20. Five times the sum of a number and eight increased by three times the difference of a number and three. 20. _____

Additional Exercises 1.4
Form III
Basic Rules of Algebra

For each algebraic expression in exercises 1 – 3, (a) determine the number of terms, (b) identify the coefficient of each term, (c) identify the constant term if there is one and (d) name any like terms or state there are none.

1. $8x + 3y - 15$

1a. _____

b. _____

c. _____

d. _____

2. $12x + 10y - 3y + 12$

2a. _____

b. _____

c. _____

d. _____

3. $\frac{1}{4}a + \frac{3}{4}b + 8 + \frac{1}{8}a + \frac{1}{2}b$

3a. _____

b. _____

c. _____

d. _____

Name the properties used in Step 1 and Step 2 of the following problems.

$$\begin{aligned} 4-5. \quad & 18 + 3(y + 4) \\ & = 18 + 3y + 12 && \text{(Step 1)} \\ & = 18 + 12 + 3y && \text{(Step 2)} \\ & = 30 + 3y \end{aligned}$$

4. _____

5. _____

$$\begin{aligned} 6-7. \quad & 72 + (3x + 28) \\ & = 72 + (28 + 3x) && \text{(Step 1)} \\ & = (72 + 28) + 3x && \text{(Step 2)} \\ & = 100 + 3x \end{aligned}$$

6. _____

7. _____

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Use the distributive property to rewrite each algebraic expression without parentheses.

8. $7(5 + 6y)$ 8. _____

9. $12(3 - 2x)$ 9. _____

10. $15(a - b - c)$ 10. _____

11. $\frac{3}{4}(12x + 16y + 4)$ 11. _____

Simplify each algebraic expression.

12. $12x + 5 - 3x - 3$ 12. _____

13. $0.08a + 0.14b + 0.16b + 0.12a$ 13. _____

14. $3(x + 7) + 4(x - 1)$ 14. _____

15. $\frac{1}{2}(8 + 2x) + \frac{1}{6}(6x + 12)$ 15. _____

16. $3(x + 5) + 2(x - 4) + 5(2x + 1)$ 16. _____

Write each English phrase as an algebraic expression. Then simplify the expression. Let x represent the number.

17. Seven times the sum of a number and three increased by four times the difference of a number and one. 17. _____

18. Five times a number increased by one-half the product of a number and eight. 18. _____

The cost C for a company to produce x number of jelly jars can be modeled by the formula $C = 0.4(x + 90,000) + 0.5x$.

19. Simplify the formula. 19. _____

20. Find the cost of producing 60,000 jelly jars. 20. _____